



# Inventory & Monitoring

## Northern Colorado Plateau Network



Dave Sharrow and Juliane Brown measure flow with a pygmy meter on La Verkin Creek, Zion National Park, UT.

## NCPN Biological Inventories are Completed

The biological inventories project has been an unprecedented effort by the NPS to scientifically inventory the biodiversity of vertebrate animals and vascular plants in order to provide documented species lists to parks. For the NCPN, this translates to 87 individual data sets for mammals, fish, birds, amphibians, reptiles and vascular plants. By documented, we mean that for every species listed in a park, we have one of three evidence categories that substantiate a particular species: a **reference**, (often many), a **voucher** specimen, either from park or other regional collections, or a verified **observation**. Data mining is one process we go through to obtain the evidence necessary to support the claim that a species is present in a park. Because of the many natural resource studies that have been conducted in NCPN parks over the decades,

there is a vast backlog of information that can be incorporated into the Park Service's biodiversity database, NPSpecies. While we have made a great start on data mining in all NCPN parks, new information, as well as data mining the legacy information, will continue to be a focus of the data management team in order to support verified, certified species lists.

What is certification? A goal of NPSpecies data management is to ensure that only verified and substantiated species information is disseminated. Certification is a process the NPS is required to conduct, involving experts on the biology, taxonomy and nomenclature of park species to review species lists and their associated fields for entry into the NPSpecies database. This process is usually conducted in a

workshop where reviewers mutually decide on the taxonomy, Park Status, Abundance, Residency and Nativity values for the database.

Certification is based on the current knowledge of the participants, combined with the current systematic information available at the time that the species lists reviews are conducted. It is also recognized that no species list will ever be 100% complete and accurate from every potential reviewer's perspective at any given time. And while the biological inventories have been completed, some of the resulting species lists are still a work in progress. The table on page 3 shows the inventory projects to date - certified data sets/species lists that are still in the review process are in bold - the remaining data can be found on the NCPN website.





National Park Service  
U.S. Department of the Interior

The National Park Service has implemented natural resource inventory and monitoring on a servicewide basis to ensure all park units possess the resource information needed for effective, science-based managerial decision-making, and resource protection.

#### Northern Colorado Plateau Network

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The National Park Service cares for the special places saved by the American people so that all may experience our heritage.

# Canyonlands Bat Inventory

The Inventory and Monitoring program at Canyonlands recently concluded a two year bat inventory which yielded a wealth of information about this little-known and often underappreciated group of animals.

Dr. Mike Bogan of the U.S. Geological Survey in Albuquerque, together with his colleague, Dr. Tony Mollhagen, confirmed the presence of 16 native bat species in the park - previous studies confirmed only eight species. As a comparison, only 18 bat species have been documented in the state of Utah. The 'bat team' worked at 34 different sites throughout the park using mist nets and acoustic surveys to document bats.



The team deployed mist nets near bodies of water and other flyways to capture bats coming to drink or to feed on insects, their primary food source. Once a bat was captured, team members recorded the species, sex, reproductive condition, time of capture and any descriptive comments about individual animals before releasing them unharmed. Acoustic surveys involve the use of a bat detector which records bat echolocation calls. Bats produce echolocation by emitting high frequency sound pulses through their mouth or nose and listening to the echo. With this echo, the bat can determine the size, shape and even texture of objects in their environment. Bat detectors contain ultrasonic microphones that can detect bat echolocation and output the incoming call within the range of human hearing, which assists in the identification of individual bat species.

Over the course of the study, the bat team captured and identified 1,717 bats with mist nets. The maximum catch on a single evening was 134 bats representing 10 species. The average catch per night was 26 bats (four species). The team identified 3,751 recordings using bat detectors, representing 11 species. The maximum number of identifiable individual calls recorded during one night was 825, with a species count of nine. The average recordings per night were 250 calls (six species).

The study showed that several sites in Canyonlands provide exceptional habitat for bats. Chief among them is Salt Creek Canyon between the junction with Horse and Peekaboo Canyons. A whopping 62% of the total bats captured came from the sampling sites in this area. These sites also yielded high species diversity, suggesting that a variety of species can meet their resource needs along this riparian corridor.

While there are no federally listed Threatened or Endangered bat species, the state of Utah lists 5 of the 16 bat species found in Canyonlands as wildlife species of concern - those species for which there is credible scientific evidence to substantiate a threat of continued population viability. Although they are long-lived (5 to 20 years), bats are vulnerable because they have low reproductive rates (one "pup" per female per year) and often roost in large groups where disturbances can affect a lot of animals at once.

Bats have been maligned in folklore and literature throughout our history. Yet these diverse flying mammals help to control insect populations, pollinate plants, disperse seeds, and pose little threat to people who do not handle them. Look for bats emerging from their day roosts in NCPN parks at dusk, especially in the spring and summer months.

**Above: the Western Pipistrelle (*Pipistrellus hepersus*), the most common bat documented in the Canyonlands inventory.**

**Left: Allen's Big-earedbat (*Idionycteris phyllotis*), one of the rarest bats in Utah, also documented in the bat inventory.**



# NCPN Inventory Status

	Mammals	Birds	Amphibians	Reptiles	Fish	Vasc Plants
ARCH	Derived from data mining	<b>Derived from data mining</b>	2001-2002 NCPN Herp Inventory	2001-2002 NCPN Herp Inventory	Derived from data mining	2004-2006 ARCH Herbarium review
BLCA	2001-2002 NCPN Mammal Inventory	2002-2003 BLCA Avian Inventory	2004 BLCA Herp Inventory	2004 BLCA Herp Inventory	Derived from data mining	2003-2005 BLCA Floristic Inventory
BRCA	Derived from data mining	<b>Derived from data mining</b>	2001-2002 NCPN Herp Inventory	2001-2002 NCPN Herp Inventory	N/A	<b>2005-2006 BRCA Herbarium review</b>
CANY	Derived from data mining	<b>Derived from data mining</b>	Derived from data mining	Derived from data mining	Derived from data mining	<b>2004-2006 CANY Herbarium review</b>
CARE	2001-2002 NCPN Mammal Inventory	<b>Derived from data mining</b>	2001-2002 NCPN Herp Inventory	2001-2002 NCPN Herp Inventory	Derived from data mining	<b>2005-2006 CARE Herbarium review</b>
CEBR	2001-2002 NCPN Mammal Inventory	2001-2002 CEBR Avian Inventory	2001-2002 NCPN Herp Inventory	2001-2002 NCPN Herp Inventory	N/A	<b>2005-2006 CEBR Herbarium review</b>
COLM	Derived from data mining	2001-2002 COLM Avian Inventory	2001-2002 NCPN Herp Inventory	2001-2002 NCPN Herp Inventory	N/A	<b>2005-2006 COLM Herbarium review</b>
CURE	2001-2002 NCPN Mammal Inventory	2002-2003 CURE Avian Inventory	2004 CURE Herp inventory	2004 CURE Herp Inventory	Derived from data mining	2003-2005 CURE Floristic Inventory
DINO	Derived from data mining	2001-2002 DINO Avian Inventory	Derived from data mining	Derived from data mining	Derived from data mining	<b>2005-2006 DINO Herbarium review</b>
FOBU	2001-2002 NCPN Mammal Inventory	2001-2002 FOBU Avian Inventory	2001-2002 NCPN Herp Inventory	2001-2002 NCPN Herp Inventory	N/A	<b>2002-2004 FOBU Herbarium review</b>
GOSP	2001-2002 NCPN Mammal Inventory	2001-2002 GOSP Avian Inventory	2001-2002 NCPN Herp Inventory	2001-2002 NCPN Herp Inventory	N/A	<b>2005-2006 GOSP Herbarium review</b>
HOVE	2001-2002 NCPN Mammal Inventory	<b>Derived from data mining</b>	2001-2003 HOVE Herp Inventory	2001-2003 HOVE Herp Inventory	N/A	<b>2001-2003 HOVE Floristic Inventory</b>
NABR	Derived from data mining	<b>Derived from data mining</b>	2001-2002 NCPN Herp Inventory	2001-2002 NCPN Herp Inventory	N/A	<b>2004-2006 NABR Herbarium review</b>
PISP	2001-2002 NCPN Mammal Inventory	Derived from data mining	2001-2002 NCPN Herp Inventory	2001-2002 NCPN Herp Inventory	N/A	<b>2003-2005 PISP Herbarium review</b>
TICA	2001-2002 NCPN Mammal Inventory	2001-2002 TICA Avian Inventory	2001-2002 NCPN Herp Inventory	2001-2002 NCPN Herp Inventory	N/A	<b>2005-2006 TICA Herbarium review</b>
ZION	Derived from data mining	<b>Derived from data mining</b>	2001-2002 NCPN Herp Inventory	2001-2002 NCPN Herp Inventory	Derived from data mining	2003-2005 ZION Herbarium review

Inventories listed in bold (Birds, Vasc. Plants) represent datasets/species lists that are still in the review process.



Tiger Salamander (*Ambystoma tigrinum*)



Colorado Pikeminnow (*Ptychocheilus lucius*)



Bighorn Sheep (*Ovis canadensis*)



Eastern Collared Lizard (*Crotaphytus collaris*)



Great Egret (*Ardea alba*)



Orange Milkweed (*Asclepias tuberosa* var. *interior*)

## Inventory and Monitoring: where can I get more information?

One of the I&M program goals is to make information easily available. See the NCPN webpage - <http://www1.nature.nps.gov/im/units/ncpn/index.cfm> to find more programmatic information. Check back from time to time for new information!

- **Climate summaries:** create graphs comparing recent and historic climate data
- **Maps:** view and print maps of our parks
- **Inventory:** download .pdf versions of park inventory reports
- **Species lists:** currently available for mammals, fish, reptiles and amphibians in all network parks; bird and plant lists are available for some
- **Bibliographies:** (requires NPS network connection) search the on-line bibliography of natural resource documents that pertain to parks
- **Data sets:** (requires NPS network connection) see an inventory of natural resource data sets for parks

# Staff Updates

## Comings...

Our new data manager, **Helen Thomas**, started at the NCPN on April 17<sup>th</sup> filling in behind Margaret Beer. Helen comes to us with a wealth of experience from the private sector and academia. She has a Ph.D. in information technology management from Georgia Institute of Technology and was Assistant Professor at Carnegie-Mellon University. She also co-founded and was product manager for Chutney Technologies, an enterprise infrastructure software company.

Hydrologist **David Thoma** began his position as the NCPN Hydrologist last July. David has a Ph.D in Water Resources from the University of Minnesota and was a Resource Hydrologist with the USDA-ARS Southwest Watershed Research Center. David is stationed at Bryce Canyon National Park.

**Janet Coles** will begin her position as vegetation program manager in August, filling in behind Angie Evenden with whom she worked closely on the vegetation mapping project for the past five years. Janet is coming to the NCPN from Natureserve, where she served as a regional ecologist for the Colorado Plateau for the past three years. Prior to that, Janet worked as the ecologist for the State of Colorado Natural Areas Program for 13 years - welcome Janet!

**Dusty Perkins** began a 45 day acting detail as NCPN Program Coordinator on July 10<sup>th</sup>. Dusty Perkins is currently the Program Coordinator for the Southern Plains network, based at Lyndon B. Johnson NHP in Austin, TX.

## ...and goings

We bid a fond farewell with best wishes for future successes to Missy Powell, Angie Evenden and Thom O'Dell.

**Missy Powell** left the NCPN in March to assume another biotech position at the Chihuahuan Desert I&M Network based in Las Cruces, NM, where she will be taking on similar duties to those she had at the NCPN. Best of luck to you, Missy!

**Angie Evenden** left at the end of April to assume the head of the Great Basin CESU based in Reno, Nevada. Angies's dedication and vision in creating the NCPN I&M program is well-known by all, and our appreciation goes with her as she begins yet another career path - good luck to Angie!

**Thom O'Dell** made the decision to step out of government work and take on the private sector in July. Thom has served as the NCPN Program Coordinator since October 2003, and faces new challenges as he begins as a partner in a start-up soil bioremediation company based in Port Angeles, WA. Best of luck to Thom in this new career path.



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